

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-13, 18 and 20-23 are pending in the present application. Claims 1-13, 18 and 20-22 have been amended and Claims 14-17 and 19 have been canceled.

In the outstanding Office Action, Claims 1-13 and 18-22 were rejected under 35 U.S.C. § 112, second paragraph; Claim 1 was rejected under 35 U.S.C. § 102(e) as anticipated by Cheng et al.; and Claims 2-13 and 18-22 were rejected under 35 U.S.C. § 103(a) as unpatentable over Cheng et al. in view of Apunevich et al.

Regarding the rejection of the claims under 35 U.S.C. § 112, second paragraph, Claims 1, 3 and 4 have been amended in light of the comments noted in the outstanding Office Action. Regarding Claim 3, it is respectfully noted the second electrode including the substrate is positioned on a cooling member to cool the substrate through the cooling member as shown in Figure 1, for example. That is, Figure 1 illustrates the substrate of the second electrode 2 being positioned on the cooling member 3 to cool the substrate through the cooling member 3. Claim 4 has also been amended to recite that the step of subjecting the carbon material is carried out while at least the first electrode, the second electrode and an arc discharge region between the first electrode and the second electrode is surrounded with a surrounding member. These features are discussed in the specification at page 7, third paragraph, for example. Accordingly, it is respectfully requested this rejection be withdrawn.

Claim 1 stands rejected under 35 U.S.C. § 102(e) as anticipated by Cheng et al. This rejection is respectfully traversed.

Amended Claim 1 is directed to a method for manufacturing a nano-tube including the steps of arranging a first electrode and a second electrode to be opposite to each other in air in which the second electrode is made of a material mainly including a carbon material.

The method also includes applying a voltage between the first electrode and the second electrode to carry out arc discharge for a period of three seconds or less between the first electrode and predetermined regions of the second electrode, and subjecting the carbon material on said predetermined regions of the second electrode into the nano-tube on a surface of the second substrate at the predetermined regions due to the arc discharge.

In a nonlimiting example, Figures 4, 6, and 7 illustrate the nano-tubes 14 formed on a surface of the second electrode 2 due to arc discharge by applying a voltage between the first electrode 10 and the second electrode 2.

Cheng et al. disclose a method of producing a carbon nanotube product by a hydrogen arc discharge. In Cheng et al. there are mainly three types of products obtained: (a) web-like substances; (b) aligned SWNT ropes that hang between the cathode and the upper chamber wall; and (c) thin films formed on the upper chamber wall, which can be peeled off in large slices ( $\sim 200\text{cm}^2$ ), and are self-fluttering, and self-adhering to hands and vessels (see column 4, lines 15-20). The carbon nanotube product thus obtained is soaked in an acid or an oxidative reactant and heated under vacuum to produce a hydrogen storage material. Cheng et al. fails to disclose the carbon nanotube formed on a surface of the anode at predetermined regions thereof due to the arc discharge between the cathode and the predetermined regions of the anode.

Accordingly, it is respectfully submitted independent Claim 1 and each of the claims depending therefrom are allowable.

Claims 2-13 and 18-22 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Cheng et al. in view of Apunevich et al. This rejection is respectfully traversed.

Independent Claims 18-20 has been amended in a similar manner as Claim 1. As discussed above, Cheng et al. do not teach or suggest these features. Further, Apunevich et al. also do not teach or suggest applying a voltage between the first electrode and the second

electrode to carry out arc discharge for a period of three seconds or less between the first electrode and predetermined regions of the second electrode and subjecting the carbon material on the predetermined regions of the second electrode to transform into the nano-tube on a surface of the second electrode at the predetermined regions due to arc discharge as claimed.

Accordingly, it is respectfully submitted independent Claims 18-20 and each of the claims depending therefrom are also allowable.

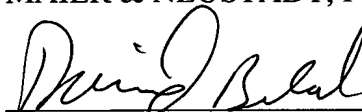
In addition, the Abstract has been amended to correspond with the claimed invention and to remove the reference numeral recited therein.

Enclosed are drawings in response to the objection.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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